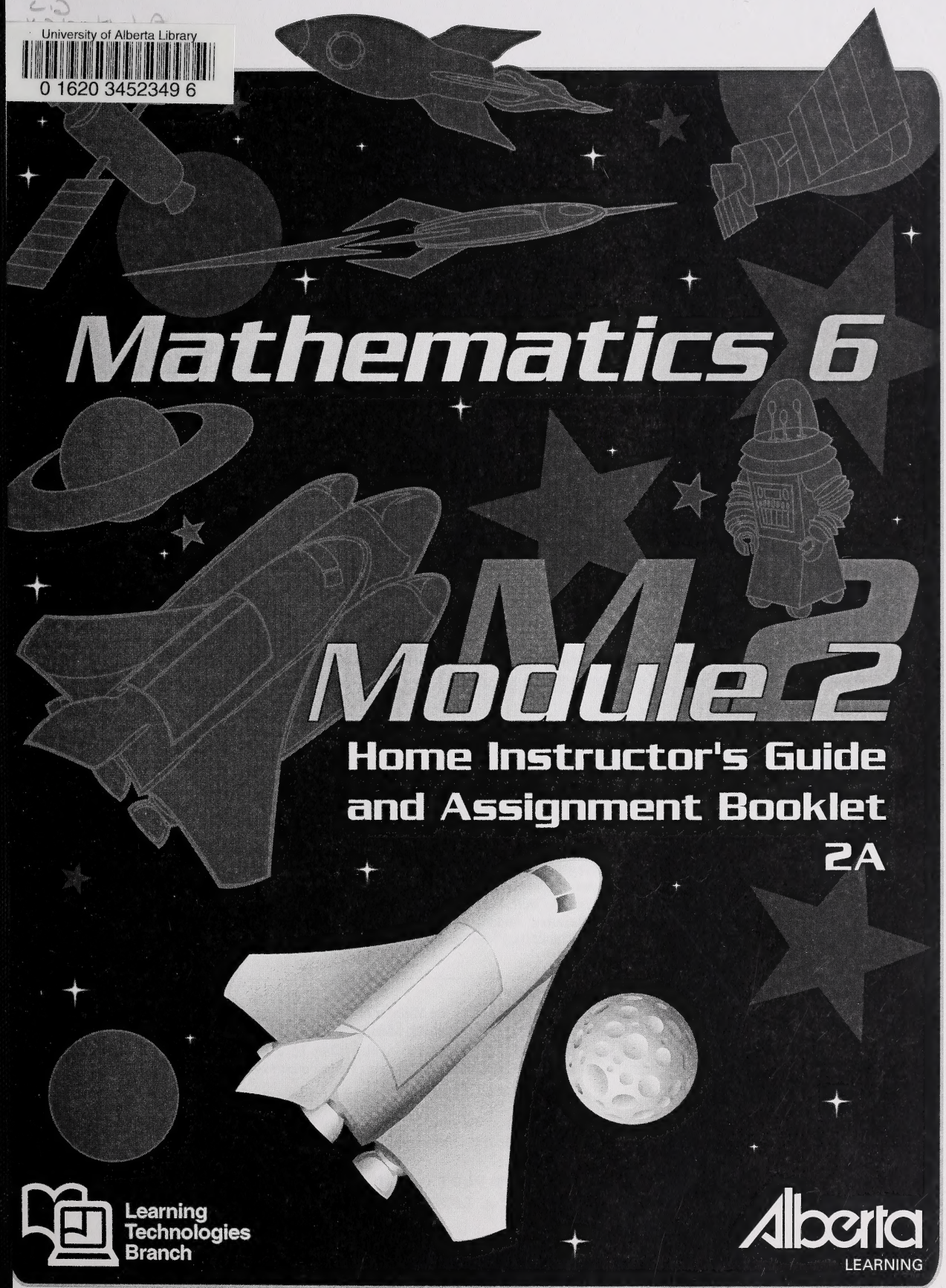

Mathematics 6

Module 2

Home Instructor's Guide and Assignment Booklet 2A

Learning Technologies Branch

Alberta LEARNING

Mathematics 6
Module 2: Number Operations
Home Instructor's Guide and Assignment Booklet 2A
Learning Technologies Branch
ISBN 0-7741-2201-3

The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Home Instructor's Guide and Assignment Booklet.

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

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Module 2: Number Operations

Overview

Module 2 reviews and extends the student's facility with basic operations involving decimals to thousandths. Strategies for estimation and computation with whole numbers are also reinforced. The student develops pencil-and-paper methods using base ten blocks, place-value charts, and counters. The student uses a variety of estimation and mental-computation strategies, pencil-and-paper methods, and calculators to solve problems.

Assessment

At the end of each of the three lessons in Module 2, the student will be directed to complete an assignment in one of the two Assignment Booklets. The assignments will be graded by the teacher and have a total value of 90 marks.

Students are also expected to complete the Numbers in the News project. This project has a value of 10 marks. Encourage the student to look through a newspaper at least once a week for items on the Scavenger Hunt list. Read through the list with your student and suggest that he or she begin collecting samples of the ideas that he or she already understands. Other samples can be collected as ideas are introduced or extended in the module. Encourage your student to collect as many samples as he or she wishes. At the end of the module, the student will need to choose at least one sample for each question and submit the samples with the Assignment Booklet.

Pacing

The module has been designed so that students can work at their own pace. Each lesson, including the lesson assignment, will take the average student about one week to complete. The Challenge Activity in each lesson is optional.

Allowing time for review of basic facts and project work, Module 2 will take students 3 to 4 weeks to complete.

Lesson 1: Computing with Whole Numbers

Overview

In this lesson the student will review and extend computation with whole numbers by using a variety of estimation and computation strategies to solve problems.

Special Requirements

The following materials are required for Lesson 1:

- calculator

Sharing Time

Students are asked to discuss what they are learning at the end of Activity 3.

This Sharing Time exercise is open-ended, so answers will vary. However, sample responses are provided.

Activity 3 Sharing Time

1. Round each number to the nearest thousand.

$$\begin{array}{r} 6000 \\ +\ 3000 \\ \hline 9000 \end{array}$$

The estimated sum is 9000.

2. Round each number to the nearest thousand.

$$\begin{array}{r} 8000 \\ -\ 1000 \\ \hline 7000 \end{array}$$

The estimated difference is 7000.

3. Round 20.12 to the nearest 10.
Therefore, 20.12×4 is approximately $20 \times 4 = 80$.

4. Round 80.12 to the nearest 10.
Therefore, $80.12 \div 4$ is approximately $80 \div 4 = 20$.

Lesson 2: Adding and Subtracting Decimals

Overview

In this lesson the student will review and extend methods for adding and subtracting decimals. The student will use base ten blocks and place-value charts to develop pencil-and-paper methods. The student will use estimation, mental computation, pencil-and-paper-computation, and a calculator to solve problems.

Special Requirements

The following materials are required for Lesson 2:

- base ten blocks
- place-value chart
- counters
- calculator

Sharing Time

Students are asked to discuss what they are learning at the end of Activity 2. This Sharing Time exercise is open-ended, so answers will vary. However some sample responses are provided.

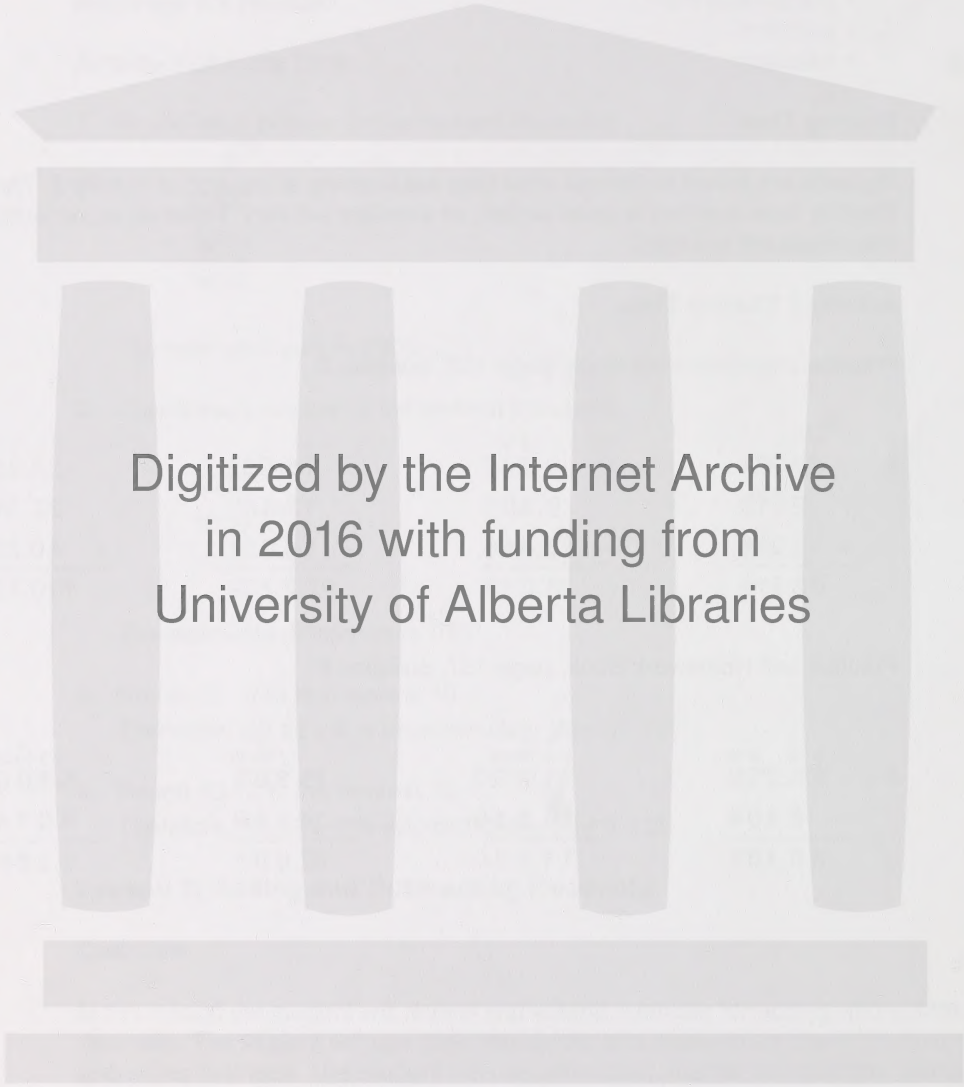
Activity 2 Sharing Time

Practice and Homework Book, page 155, question 5

5.				
	^{1}48.201	$^{1\ 1\ 1}$0.262	$^{1\ \ 1}$75.251	$^{1\ \ 1}$33.333
	2.513	9.305	13.486	27.142
	+ 13.204	+ 13.446	+ 14.002	+ 40.253
	63.918	23.013	102.739	100.728

Practice and Homework Book, page 157, question 6

6.				
	$^{6\ 16\ \ 6\ 10}$~~7~~~~6~~.2~~7~~0	$^{2\ ~~10\ \ 9\ 10}$~~3~~~~1~~.0~~0~~0	$^{2\ ~~9\ 10}$76.~~3~~0~~0~~	$^{2\ ~~9\ 10}$6.~~3~~0~~0~~
	− 8.104	− 19.310	− 14.209	− 6.014
	68.166	11.690	62.091	0.286



ASSIGNMENT BOOKLET 2A

PAT0610 Mathematics 6
Module 2: Lesson 1 Assignment and Lesson 2 Assignment

Home Instructor's Comments and Questions

_____
Home Instructor's Signature

FOR HOME INSTRUCTOR USE
(if label is missing or incorrect)

Student File Number:

_____

Date Submitted:

_____

Apply Module Label Here

Name

Address

Postal Code

Please verify that preprinted label is for correct course and module.

FOR SCHOOL USE ONLY

Assigned Teacher:

_____

Date Assignment Received:

_____

Grading:

_____

Additional Information:

_____

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Teacher's Comments

_____
Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

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- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

MAILING

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Send all letters in a separate envelope.

2. Postage Rates

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FAXING

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2. All faxing costs are the responsibility of the sender.

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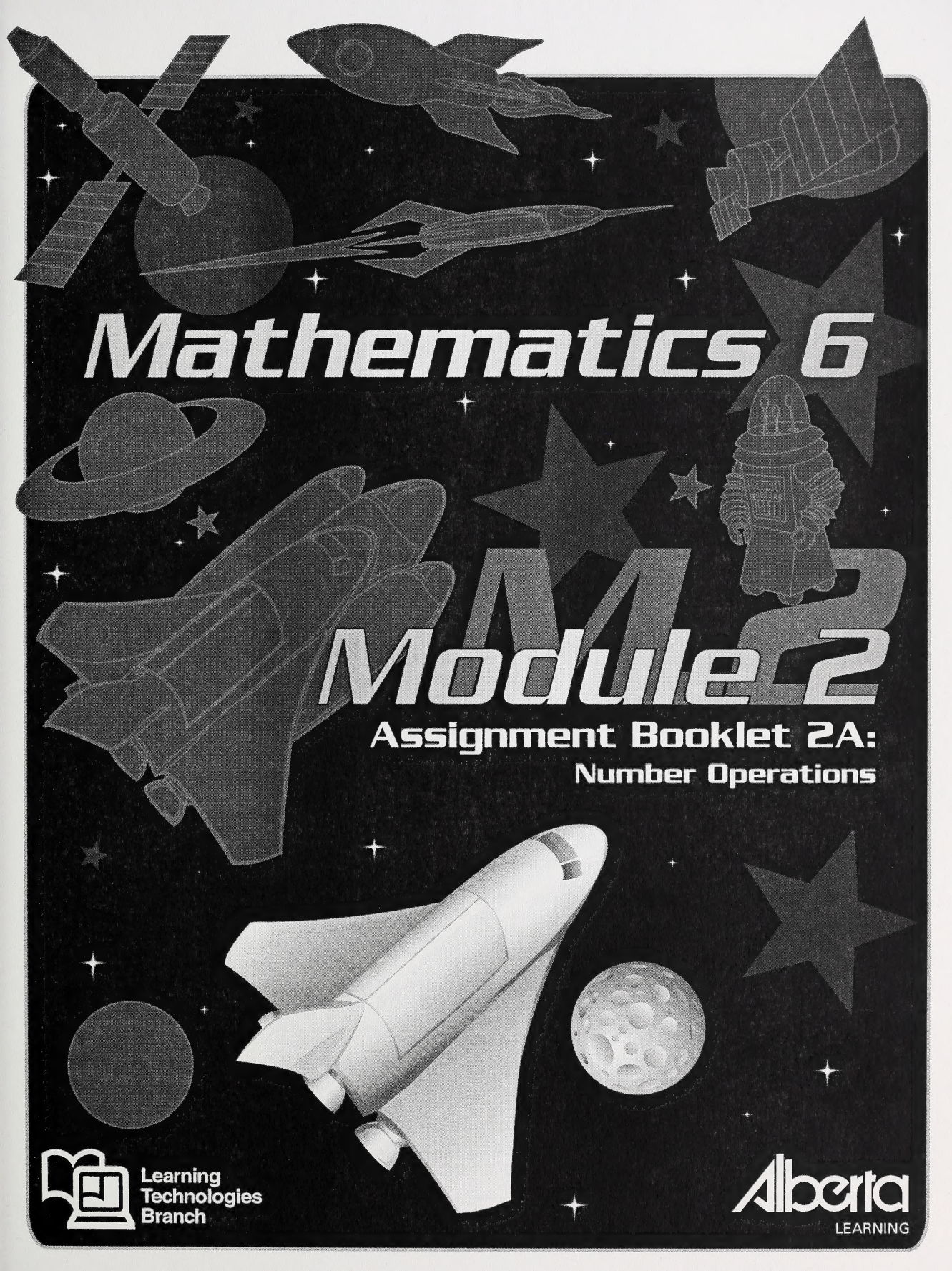
Mathematics 6
Module 2
Assignment Booklet 2A:
Number Operations
Learning
Technologies
Branch
Alberta
LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Lesson 1 Assignment	30	
Lesson 2 Assignment	30	
	60	

Teacher's Comments

Mathematics 6
Module 2: Number Operations
Assignment Booklet 2A
Learning Technologies Branch

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ASSIGNMENT BOOKLET 2A
MATHEMATICS 6—MODULE 2: NUMBER OPERATIONS

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

There are two lesson assignments in this Assignment Booklet. The total value of these assignments is 60 marks. The value of each question is stated in the left margin.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

Be sure to proofread each assignment carefully.

30

Lesson 1 Assignment: Computing with Whole Numbers

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

In addition to five national parks, Alberta has many other types of park areas. These are shown in the following table. Use this information to answer questions 1 to 5.

Type of Park	Number of Parks	Area (hectares)
Provincial Parks	64	106 980.6
Provincial Recreation Areas	283	77 582.1
Ecological Reserves	16	29 444.4
Wilderness Areas	3	100 988.8
Natural Areas	156	125 863.0
Willmore Wilderness Park	1	459 671.0
Other	47	686 076.7

(3) **1. a.** Estimate the total number of parks. Show how you arrived at your answer.

b. Use your calculator to find the total number of parks.

(1)

(3) **2.** Which type of park accounts for about one-half of all the parks? Explain why you chose this type of park as your answer.

(3) **3.** The number of provincial parks is exactly how many times as great as the number of ecological reserves? Show how you arrived at your answer.

(4) **4. a.** Estimate the total area covered by all types of parks. Explain how you arrived at your answer.

b. Use your calculator to find the total area covered by all types of parks.

(1)

(3) **5. a.** Estimate the difference, in hectares, between the provincial parks and the provincial recreation areas. Explain how you arrived at your answer.

b. Use your calculator to find the difference, in hectares, between the provincial parks and the provincial recreation areas.

(1)

6. In the book *Counting on Frank*, by Rod Clement, Frank's master learns that the average ballpoint pen can produce a line that is 2100 m long. A pencil could make a line about 18 times longer than this.

(3) **a.** Estimate how many kilometres long the pencil line would be. Explain how you arrived at your answer.

b. Use your calculator to verify your estimate. Show how you got your answer.

(2)

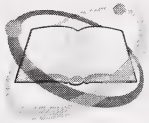
(6)

7. About 280 million cans of a particular brand of pop are sold worldwide each day. Suppose you were able to stack enough cans to reach the moon, which is 385 000 km away. How many days would it take to sell enough cans to be able to make a stack of them that reaches the moon? Show your work to find an estimate for this question.

30

Lesson 2 Assignment: Adding and Subtracting Decimals

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.



Turn to page 75 in your textbook to Strategies for Addition and Subtraction.

(4)

1. For the addition, $24.70 + 3.86$, draw pictures in the following table to show how you can use base ten blocks to represent the numbers, and then regroup them to match each step of the boy's strategy.

Work with Base Ten Blocks	Chalkboard Talk (Boy's Strategy)
	24 .70 + 3 .86
	24 .70 + 3 .86 27 1.56
	24 .70 + 3 .86 27 ①.56 1 28
	24 .70 + 3 .86 27 ①.56 1 28 28.56

(4) **2. a.** For the subtraction, $95.40 - 1.87$, draw pictures to show how you can use a place-value chart and counters to match each step of the girl's strategy.

Tens	Ones	Tenths	Hundreths	Chalkboard Talk (Girl's Strategy)
				95.40
				9 4 13 10 ~~95.40~~
				9 4 13 10 ~~95.40~~ – 1.87
				9 4 13 10 ~~95.40~~ – 1.87 93.53

(3) **b.** Describe the boy's subtraction strategy and explain why it works.

(2) **3.** Explain how you would use mental computation for the following calculation.

$45.02 – $13.98

Turn to pages 62 and 63 in your textbook. Use the information shown in Starting Out to answer questions 4 to 7. (**Hint:** Keep the good offers that are advertised in mind.)

4. The girl on the bottom of page 62 has decided to buy a drink as well as either one sandwich, one salad, or one hot food item.

(2) Show one set of items she could choose if she spends exactly $5.

(3) **5.** The boy on the bottom of page 62 wants to buy lunch for himself and a friend. They both want a sandwich, a bag of chips, and a cold drink. Does the boy have enough money? Explain your reasoning.

(3) **6.** Explain which of the following would cost more, ten hamburgers or ten chicken salad sandwiches.

_____

_____

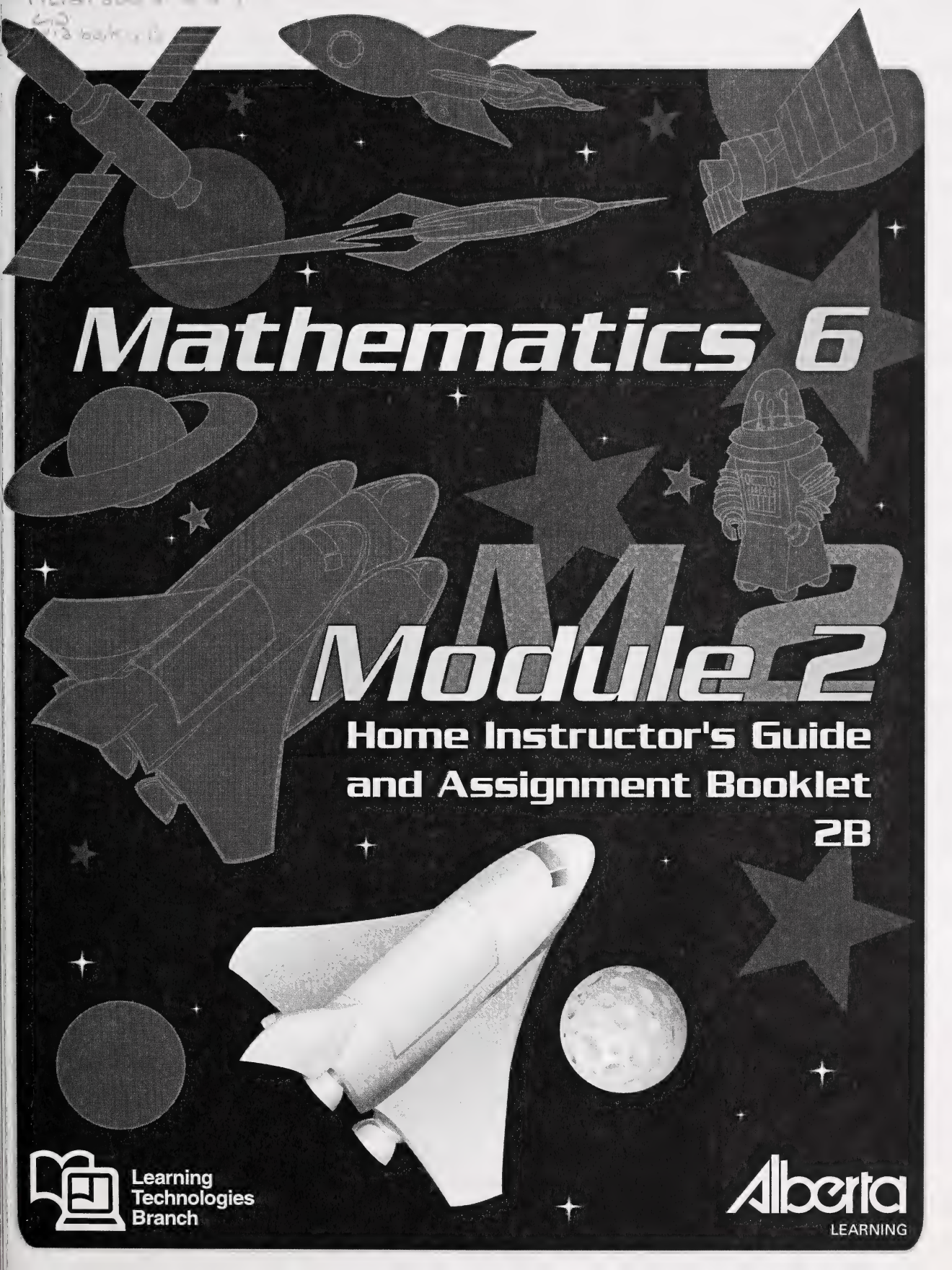
_____

_____

(3) **7.** Suppose you wanted to buy a sandwich, a salad, a drink, and an apple. Find the least expensive combination. Explain your answer.

(3) **8.** Nigel and Maria are combining their money to buy a gift. Together they have $52.08. Maria has $12.08 more than Nigel. How much did each have before they combined their money? Show your work and explain how you solved this problem.

(3) **9.** Jane bought three bags of gumdrops from the bulk bin. Their total mass was exactly 1 kg. Decide which combination of three of the following bags she bought: 0.334 kg, 0.356 kg, 0.335 kg, 0.315 kg, 0.310 kg. Explain how you solved this problem.


Mathematics 6
Module 2
Home Instructor's Guide
and Assignment Booklet
2B
Learning
Technologies
Branch
Alberta
LEARNING

Mathematics 6
Module 2: Number Operations
Home Instructor's Guide and Assignment Booklet 2B
Learning Technologies Branch
ISBN 0-7741-2202-1

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Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

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Lesson 3: Multiplying and Dividing Decimals

Overview

In this lesson the student will review and extend methods for multiplying and dividing decimals. The student will use base ten blocks and place-value charts to develop pencil and paper methods. The student will use estimation, mental computation, pencil-and-paper computation, and a calculator to solve problems.

Special Requirements

The following materials are required for Lesson 3:

- base ten blocks
- place-value chart
- counters
- calculator

Sharing Time

Students are asked to discuss what they are learning at the end of Activities 1 and 2.

Activity 1 Sharing Time

Practice and Homework Book, page 163, question 4

$$\begin{array}{r} {\scriptstyle 2\ 2\ 2} \\ 7.333 \\ \times \quad 9 \\ \hline 23.997 \end{array} \qquad \begin{array}{r} {\scriptstyle 3\ 3\ 4} \\ 6.556 \\ \times \quad 7 \\ \hline 45.892 \end{array} \qquad \begin{array}{r} {\scriptstyle 5\ 5\ 4} \\ 8.997 \\ \times \quad 6 \\ \hline 53.982 \end{array} \qquad \begin{array}{r} {\scriptstyle 11\ 1\ 3} \\ 12.326 \\ \times \quad 5 \\ \hline 61.630 \end{array}$$

Activity 2 Sharing Time

Practice and Homework Book, page 166, question 5

5.
$$\begin{array}{r} 6.541 \\ 3\overline{)19.623} \\ 18 \\ \hline 16 \\ 15 \\ \hline 12 \\ 12 \\ \hline 03 \\ 3 \\ \hline 0 \end{array} \qquad \begin{array}{r} 0.541 \\ 9\overline{)4.869} \\ 45 \\ \hline 36 \\ 36 \\ \hline 09 \\ 9 \\ \hline 0 \end{array} \qquad \begin{array}{r} 0.618 \\ 7\overline{)4.326} \\ 42 \\ \hline 12 \\ 7 \\ \hline 56 \\ 56 \\ \hline 0 \end{array} \qquad \begin{array}{r} 1.367 \\ 6\overline{)8.202} \\ 6 \\ \hline 22 \\ 18 \\ \hline 40 \\ 36 \\ \hline 42 \\ 42 \\ \hline 0 \end{array}$$

ASSIGNMENT BOOKLET 2B

PAT0610 Mathematics 6
Module 2: Lesson 3 Assignment and Numbers in the News Project

Home Instructor's Comments and Questions

_____
Home Instructor's Signature

FOR SCHOOL USE ONLY

Assigned Teacher:

_____

Date Assignment Received:

_____

Grading:

_____

Additional Information:

_____
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_____

FOR HOME INSTRUCTOR USE
(if label is missing or incorrect)

Student File Number:

_____

Date Submitted:

_____

Apply Module Label Here

Name
Address
Postal Code

Please verify that preprinted label is for correct course and module.

Teacher's Comments

_____
Teacher's Signature

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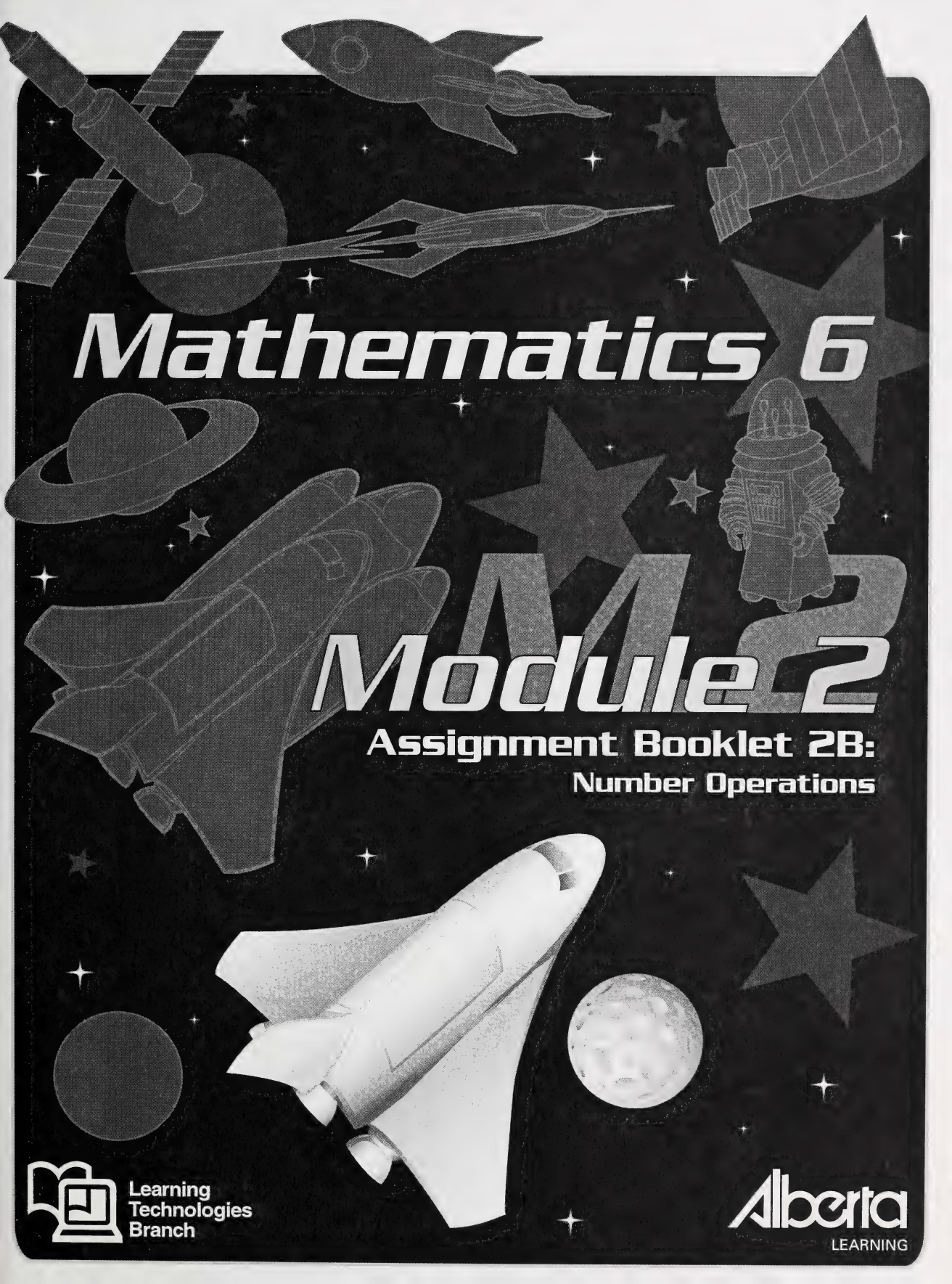
Mathematics 6
Module 2
Assignment Booklet 2B:
Number Operations
Learning
Technologies
Branch
Alberta
LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Lesson 3 Assignment	30	
Numbers in the News Project	10	
	40	

Teacher's Comments

Mathematics 6
Module 2: Number Operations
Assignment Booklet 2B
Learning Technologies Branch

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ASSIGNMENT BOOKLET 2B
MATHEMATICS 6—MODULE 2: NUMBER OPERATIONS

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

There is one lesson assignment and a Numbers in the News project in this Assignment Booklet. The total value of the lesson assignment is 30 marks. The Numbers in the News projects is worth 10 marks. The value of each question is stated in the left margin.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

Be sure to proofread each assignment carefully.

30

Lesson 3 Assignment: Multiplying and Dividing Decimals

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

1. Three containers each contain 1.275 L of juice.

(1)

a. Write a multiplication sentence to find the total amount of juice (in litres) in the three containers.

④ **b.** Draw pictures on a place-value chart to show how you can use counters to represent this problem, and each step you would take to regroup them to find the answer.

Ones	Tenths	Hundredths	Thousandths
●	●●	●●●●● ●●	●●●●●
●	●●	●●●●● ●●	●●●●●
●	●●	●●●●● ●●	●●●●●

(2) **c.** Use a pencil-and-paper method that shows similar steps you used with the place-value chart and counters.

2. A 0.932-kg package of nutmeg was divided into 4 smaller packages.

(1) **a.** Write a division sentence that shows how to find the number of kilograms of nutmeg in each of the 4 smaller packages.

(2) **b.** Use a pencil-and-paper method to find the number of kilograms of nutmeg in each package.

3. Bohdan needs to cut 7.92 m of trophy ribbon into six equal lengths.

(2) **a.** Before he actually calculates the solution, what might Bohdan estimate each length to be? Explain your method.

(2) **b.** If Bohdan has no calculator or pencil, explain the steps he might use to find the exact answer mentally.

4. Use all of the following cards to answer the questions.

(2) **a.** Make a decimal number (less than 1) and a one-digit divisor. Arrange the numbers to get the greatest quotient. (You do not have to calculate the quotient.)

(3) **b.** Explain a strategy that will work successfully on any set of digits.

(2) **c.** Make a decimal number (less than 1) and a one-digit multiplier. Arrange the numbers to get the greatest product. (You do not have to calculate this product.)

5. Tracy bought 518 bedding plants at a farmers' market for $0.48 each.

(1) **a.** Write a multiplication sentence you could use to find the total amount she paid for the bedding plants.

(3) **b.** Use division to estimate the answer. Show your work and explain your thinking.

c. Use multiplication with your calculator to find the total amount of money she paid.

(1)

(4) **6.** Use a pencil-and-paper method to find each answer. Show your work.

a. 2.56×7

b. $7\overline{)24.43}$

(10) **Numbers in the News**

Go through the Scavenger Hunt list for Module 2 to make sure you have clipped at least one example for each question. Ask your home instructor to check the samples you found. Choose the sample you wish to use, and label each one with the scavenger hunt number it matches. Organize your samples and put them together with any other information required. Submit your project with this Assignment Booklet.

Ask yourself the following questions:

- Is my Numbers in the News project complete? (Have I included all my samples?)
- Do my samples show the ideas clearly? (Are my examples appropriate?)
- Did I take care to be neat when organizing and labelling my work?